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ABSTRACT

Although much has been achieved during the last decade in the area of drug abuse, drug abuse still remains a major social, economic and political problem and continues to receive a significant amount of attention from policy-makers and researchers. Treatment facilities have vastly expanded their capabilities over the years, accepted treatment techniques continue to be refined, and new treatment techniques have been developed. This paper highlights the more significant lessons that have been learned over the last decade about drug abusers and their treatment, reviews past research related to drug treatment programs and their effectiveness, and notes the future directions for clinical research that have been proposed by the National Institute on Drug Abuse. (Author/MP)

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APPENDIX
HEALTH RESEARCH FORUM

A SURVEY OF THE LAST DECADE OF DRUG ABUSE TREATMENT RESEARCH

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A SURVEY OF THE LAST DECADE OF DRUG ABUSE TREATMENT RESEARCH*

The Federal Government recognizes the serious and pervasive nature of drug abuse and misuse. More than a decade ago, it began an active campaign to reduce the morbidity and mortality associated with inappropriate drug use. Drug abuse remains a major social, economic and political problem and continues to receive a significant amount of attention from policy makers and researchers. Treatment facilities have expanded vastly their capabilities over the years. Accepted treatment techniques continue to be refined and new techniques developed.

This brief paper will attempt to highlight the more significant lessons that have been learned over the past decade, indicate what the results of pertinent studies are, and note the future directions for clinical research that have been proposed by the National Institute on Drug Abuse (NIDA).

Significant Lessons That Have Been Learned

Drug abusers are a dynamic population, constantly changing their substances of abuse, their folklore, and their membership. Teenagers are the principal source for recruitment of new members to the drug abusing and misusing populations. It must be recognized that use of alcoholic beverages by teenagers less than 18 years of age, in almost all states, is as illegal as the use of marijuana in the same states. The legal and social sanctions for the illegal and inappropriate use of these two substances are not equal. The patterns of drug use in the teenage population have increased and become more complex over the past decade. As Lee Robins in her epidemiologic review in this monograph indicates, teenagers are experimenting with more substances, at an earlier age, and using them in greater amounts. Thus, we have an adolescent population using sophisticated combinations and permutations of psychoactive substances that may cause serious adverse medical and psychological effects with resultant permanent brain damage and death. Inhalants (glue, gasoline, turpentine, etc.) are used to produce transient hypoxia and an allegedly pleasant lightheadedness. Inhalants are often organic solvents that are extremely toxic to brain tissue – they dissolve the lipoprotein covering of nerve cell endings leading to nerve death and brain damage. Hallucinogens alter an individual's perception of reality. Not infrequently they precipitate frank psychosis in susceptible individuals, and these individuals then are unable to regain contact with reality when the direct effects of the drug are anticipated to cease – they remain psychotic.

In the 4 years, 1970 to 1973, "Federal expenditures for drug treatment and rehabilitation increased nearly thirteen-fold" (National Commission on Marihuana and Drug Abuse, 1973, pp. 301-302). The proliferation of programs was accompanied by a large number of studies that examined the impact of individual treatment programs.

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*This paper was not presented at the Research Forum. It was prepared in response to the discussion which indicated a need for additional information on the topic of drug treatment research.

President Carter's 1977 message to Congress called for a reorientation of the Federal drug treatment effort to include persons dependent on other drugs. In addition, recent Federal strategy also has emphasized the need for a broader perspective in drug treatment program services to include the *nontraditional* clients whose drug or alcohol consumption is contributory to other problems. (Strategy Council on Drug Abuse, 1979, pp. 23-24).

The broadening orientation of drug treatment programs and service delivery systems hampers efforts to describe the characteristics and behaviors of treatment clients and to evaluate the impacts of drug treatment programs. Researchers not only must build upon past research efforts, but also must be capable of identifying and assessing new directions in drug treatment efforts. The proposed use of block grants to the states suggests that many states may change significantly their treatment systems. Modification in research design, instrumentation and analytic approaches may be necessary to provide data that meet the current needs of program managers and policy makers.

Past Research on Drug Treatment Programs

One of the early sets of empirical studies was carried out on the Dole-Nyswander methadone programs at New York's Beth Israel Hospital (Dole & Nyswander, 1965; Dole, Nyswander, & Kreek, 1966). Following the initial studies, the need for independent corroboration of the results led to a series of evaluation studies conducted by Dr. Frances Gearing (1977). Generally, these have been positive and supportive of the Beth Israel program, but the methodological weaknesses in the studies, and the generalizability and validity of the conclusions have been strongly questioned (Lukoff, 1974; Maddux & Bowden, 1972; Nash, 1976).

Another important series of studies was conducted on the NARA hospitals at Lexington, Kentucky and Ft. Worth, Texas. Several studies were based on the more than 6,500 patients admitted to Lexington from 1967 to 1973; others were based on earlier, pre-NARA patients (Chambers, 1974; Gold & Chatham, 1973; O'Donnell, 1969; Pescor, 1938; Valliant, 1966; Voss & Stephens, 1973). These studies and the data generated provide a wealth of information about the correlates of narcotic addiction. For a variety of reasons, however, ranging from the special addict population to the unique treatment facilities and approach, the current value of these studies may be more historical and theoretical than policy relevant. Consequently, the findings of the NARA studies are of limited value for other treatment programs.

In the late 1960s, the most comprehensive and ambitious evaluation of drug treatment programs was begun at the Institute of Behavioral Research of Texas Christian University under the direction of S.B. Sells. The Drug Abuse Reporting Program (DARP) collected over 44,000 admission records from 52 NIDA supported agencies between 1969 and 1973. The results of the initial data collection are compiled in a series of five volumes (Sells, 1974; Sells & Simpson, 1976) and numerous technical reports and journal publications. Five-year follow-up interviews with 3,131 clients were conducted in 1975 and 1976 from a sample of 4,107 former clients in the first two cohorts (Sells, Demaree, & Hornick, 1980; Simpson, Savage, Lloyd, & Sells,

1978). In the intervening 5 years, however, no information was collected on a regular basis. Thus, information about behavior immediately after leaving treatment or variation in behavior in these 5 years may be unreliable because of the long recall period.

From the data on methadone maintenance treatment, Sells (1977) reported that although improvements occurred in all outcome measures, deviant behavior was not eliminated entirely. The largest changes in behavior occurred in the first 2 months, with smaller changes throughout treatment. The follow-up data indicated that improvements in a number of outcome measures were maintained after treatment, particularly for clients in methadone maintenance and therapeutic community programs (Sells, Demaree, & Hornick, 1980). Sells (1977) concluded that treatment in general does produce beneficial effects, and that, especially in the case of methadone maintenance, the benefits far outweigh the costs. This conclusion was supported in an update of treatment cost benefits (Rufener, Rachal, & Cruze, 1976).

In addition to these large-scale efforts, several important individual studies were conducted during the 1970s. Among the well-conceived and carefully conducted studies of methadone programs are those by Newman, Bashkow, & Cates (1973) and Lukoff (1974) in New York; by Cuskey, Ipsen, & Premkumar (1973) in Philadelphia; by Patch, Raynes, & Fisch (1973) in Boston; and by System Sciences, Inc. (1973) in New York City.

Other studies of special programs have included the followup of samples of the California Civil Commitment Program, 1964 and 1970 admissions and comparison groups (McGlothlin, Anglin, & Wilson, 1977). This study was one of the few attempts at an experimental study with random assignment to treatment modalities. Only 49% of those randomly assigned to therapeutic communities stayed 3 or more days; nearly 69% entered and stayed at least 3 days for methadone treatment.

Other more general studies of different kinds of programs include the research funded by the Office of Economic Opportunity (OEO) and conducted by Johns Hopkins University (Mandell, Goldschmidt, & Grover, 1973); Nash's evaluation of 30 New Jersey programs (Nash, 1976) and Burt Associates (1977) comparison of follow-up data from Addiction Services Agency programs in New York and Narcotic Treatment Administration programs in Washington, D.C.

In one way or another, all of these and other studies increased the state of our knowledge. All are open to many basic criticisms of methodology, however, and are of limited generalizability. Lukoff (1974), Nash (1976), Maddux & Bowden (1972), Greenberg & Adler (1974) and the National Commission on Marihuana and Drug Abuse (1973) all indicated the major weaknesses in past evaluation efforts. Three deficiencies appear in most treatment studies: sampling, research design and measurement. Treatment cohort entrants, nonenrollees, and splittees often are not sampled systematically. Pretreatment, intreatment, and posttreatment periods differ across studies. Measures often are criticized as being unreliable and invalid. Programs often are evaluated on absolute rather than comparative levels of client behavior that would allow reasonable outcome expectations for the target populations. It often is difficult to ascertain the characteristics of the program, including time in treatment,

the actual structure and process of treatment, and ancillary services, which would permit a more complete and useful categorization or description of programs. Another overriding problem indicated by Sells is the context in which programs operate and the nature of addiction itself.

> Unfortunately unequivocal answers are not yet available to the questions raised and decisionmaking, both at the clinical and administrative levels, is hampered by continuing lack of definitive knowledge concerning the basic etiology and epidemiology of drug abuse and opiate addiction. Without doubt the difficulties will be increased by current budget cuts. However, effective solutions must still await the acquisition of the social-political setting in which it occurs and must be treated and controlled (Sells, 1977, p. 20).

Despite the comprehensive NARA and Johns Hopkins studies as well as the many individual studies, the basic question posed by the Domestic General Council on Drug Abuse and the Alcohol, Drug Abuse, and Mental Health Administration (ADAMHA) – "What kind of results are forthcoming from dollars spent supporting drug treatment programs?" – remains in large part unanswered. And, while the DARP follow-up studies have provided some indication of the long-term impact of treatment, the last DARP admission cohort was calendar year 1973. Since then, addicts, treatment programs and the economic, political and social environment have changed dramatically; significant changes are likely to continue in the next 4 to 5 years. Moreover, research like that by Nurco (1976) on the episodic nature of drug use and addiction, by Robins (1974) on the reversibility of addiction, and by Rivers *et al.* (1976) on increased criminality and drug problems immediately before entering treatment, coupled with more systematic assessment of the prevalence and incidence of drug use, abuse, and associated problems, have suggested new lines of research. These and other efforts may be indicative of a reorientation of policies and programs.

Recent Evaluations of Treatment Effectiveness

The efforts to evaluate the effectiveness of drug treatment programs are hampered by many of the same problems encountered in the evaluation of other social programs. The science of evaluation still is being developed. Recent attempts have been made to outline the issues and methodologies of evaluation (Guttentag & Struening, 1975; Struening & Guttentag, 1975), to compile important evaluation studies (Glass, 1976; Guttentag, 1977), and to obtain comments and critiques of major evaluation studies and approaches (Abt, 1976; Cronbach & Associates, 1980). Other publications have focused on more generally practical methods of evaluating particular kinds of programs such as corrections (Adams, 1975), manpower (Borus, 1971), human service programs (Atkinson, Hargraves, & Horowitz, 1977), and drug treatment programs (Bale, Cabera, & Brown, 1977; Guess & Tuchfeld, 1977; Johnston, Nurco, & Robins, 1977). Despite the development of evaluation methodologies, key questions about the effectiveness of manpower (Perry, Anderson, Rowan, & Northrup, 1975), corrections (Lipton, Martinson, & Wilks, 1975; Sechrest & Redner, in press) and deterrence or incapacitation of offenders (Blumstein, Cohen, & Naglin, 1978) remain unanswered.

Recent discussions of treatment evaluation have devoted more attention to ways to overcome the problems that plagued previous research. Robins (1977) suggested methods of conducting evaluations to meet the needs of policy makers. Sells (1977; 1979) and Reed (1978) discussed major concepts and approaches to investigating treatment effectiveness. DesJarlais (1978) discussed three research evaluation paradigms applicable to different perspectives on assessing treatment program effectiveness. Lukoff and Kleinman (1977), based on a review of four major evaluations, prescribed ways to improve evaluations including correct measurements, appropriate research design, comparison of homogeneous groups, consideration of possible maturation effect and multivariate analysis techniques. Although they were cautious in their assessment of the potential of future evaluations, they suggested that a careful, comprehensive approach to evaluation can be useful in assessing treatment effects.

> Sophisticated methods of analysis alone cannot resolve the problems we have reviewed concerning the assessment of program impact. However, when used in conjunction with a careful choice of comparative framework and with analysis by retention cohorts, they can add to the reservoir of knowledge about treatment. This would open up fresh possibilities for improving the treatment system, so that it could serve more effectively those who present themselves for rehabilitation (Lukoff & Kleinman, 1977, p. 173).

Three recent studies highlighted the more recent advances in the field of treatment evaluation. The DARP Followup Study (Simpson, Savage, Lloyd, & Sells, 1978) is a prototype for a large-scale, long-term followup of former treatment clients. The recent followup of the California Civil Addict Program (McGlothlin *et al.*, 1977) used very comprehensive and detailed measurements. The evaluation of programs in New York City and Washington, D.C. (Burt Associates, 1977) used comparison and multivariate techniques to a greater extent than previous research.

The five major outcome behaviors:

1. Drug and Alcohol Use

Although logically one of the primary goals of drug treatment, reduced drug use, generally is not emphasized as an outcome. Reduction in drug use was one of the clearest results of the DARP intreatment studies. Lukoff and Kleinman (1977), however, cautioned that there is considerable motivation for clients to distort reports of drug use in a program, particularly when it could affect treatment. Smart's (1976) review of outcome studies of therapeutic communities indicated that drug use generally was reported to be reduced or eliminated for many former clients. Burt Associates (1977) reported substantial reductions in drug use after treatment with little evidence of substitution. Similar reductions in daily narcotic use were reported for former Civil Addict Program clients (McGlothlin, Anglin, & Wilson, 1977), though McGlothlin cautioned that part of this reduction might be caused by enrollment in methadone programs.

The results of the DARP Followup (Simpson *et al.*, 1978) raised some questions about drug use after treatment. While both opiate and nonopiate use fell after treatment, alcohol use appeared to increase.

Alcohol use is found commonly among drug abusers in treatment. Stimmel (1979) cautioned that this association should not be interpreted to mean that treatment precipitated or reinforced drinking. He reported on studies of combined alcohol and drug treatment programs that reduced both behaviors.

2. Criminal Behavior

With respect to the effectiveness of treatment in reducing crime, several reviews and studies have been completed. Nash (1976) reviewed 12 studies in a state-of-the-art paper prepared for the Panel on Drug Use and Criminal Behavior. After reviewing the findings of eight studies of methadone maintenance, two studies of residential drug-free treatment programs, two studies of both types of programs, he concluded that, despite some methodological problems, a positive impact of treatment on criminality was demonstrated. Seven of the 10 methadone maintenance studies showed a positive impact of treatment on arrest or charge rates. All four studies of residential drug treatment showed lower arrest rates after treatment than before. Lukoff's and Kleinman's (1977) review of some of the same studies was much less supportive of the overall conclusion that treatment reduced crime. Their critique of the studies found fault with the data used, the failure to eliminate alternative explanations through proper design and analysis, and measurement choices.

In its review of treatment impact on crime, the NIDA Panel on Drug Use and Criminal Behavior (*Drug Use and Crime,* 1976) concluded that being in treatment may suppress, rather than eliminate, involvement with the criminal justice system and even criminal behavior itself. In a similar approach, an analysis of DARP follow-up data commissioned by the Panel (Demaree & Neman, 1976) suggested that criminal behavior increases after leaving drug treatment and may revert to pretreatment levels. A later evaluation of this relationship from the DARP data for a single year after completion of treatment confirmed that posttreatment arrests returned to pretreatment levels for all but those patients treated in methadone maintenance programs (Simpson *et al.,* 1978).

An experimental/control group evaluation design for an intensive group therapy program for an Ontario, Canada correctional center provided more recent evidence on this issue (Annis & Liban, 1979). Subjects were 150 inmates assigned to two experimental treatment conditions and one control condition. No differences were found between the groups in numbers of arrests, numbers of convictions, or days served in prison in the year following release.

3. Employment

Probably the most comprehensive literature review of the impact of treatment on the employment and earnings of drug abuse treatment clients was conducted by Hubbard, Harwood, and Cruze (1977). It was based on a review of over 70 studies of employment and earnings of drug treatment clients during and after treatment and over 50 sources on the impact of vocational services on the employment and earnings of drug treatment clients. Several conclusions that could be derived confidently from this literature review are noted below.

Drug abusers or addicts entering a drug treatment program appear to experience a modest increment in employment during and after treatment. Because insufficient background data on work histories prior to treatment were found, it is difficult to determine how much of this increment would have occurred in the absence of treatment. In a few studies, comparison groups of abusers or addicts who did not enter treatment also experienced some gains in employment. The proportion of drug treatment clients reporting public assistance as the major source of support during and after treatment is much higher than the proportion reporting public assistance as the major source before entering treatment. The actual amounts of income from each of the sources were seldom obtained in treatment evaluations. Having a job was found to be one of the strongest correlates of long-term rehabilitation of drug abusers. This result is replicated in numerous studies. However, there is insufficient data to determine the causal relationship (if any) between work and rehabilitation. Drug treatment clients receiving vocational and employment services have placement rates that are comparable to the after treatment employment rates of a general sample of treatment clients. The impact of vocational and employment services remains unclear. We lack data on the background, work histories, labor market conditions and vocational needs of clients receiving vocational and employment services. Consequently, it is difficult to estimate what would have been the employment-related behaviors in the absence of services. The available studies indicate that job retention and the kind of job placement are areas that require further research. The results of the McGlothlin, Anglin, and Wilson (1977) study, the DARP Followup (1978), and the National Supported Work Demonstration (1980) all showed increases in employment after treatment. The definitions and measurements of employment, however, remain suspect.

4. Depression

Woody and Blaine (1979) reviewed the considerable evidence of the association between depression and addiction. Depression was common among applicants to both therapeutic communities (DeLeon, 1974; Zuckerman, Sola, Masterson, & Angelone, 1975) and methadone programs (Frederick, Resnick, & Wittlin, 1973; Weissman, Slobetz, Prusoff, Mesritz, & Howard, 1976). The effects of treatment on depression are confounded. Various measures have been used to assess depression among substance abusers (Rounsaville, Weissman, Rosenberger, Wilber, & Kleber, 1979; Wiehl & Turner, 1980). Woody and Blaine (1979) reported that most studies found that high levels of depression at intake decreased over time. They also cautioned, however, that suicide attempts are more common during withdrawal phases of treatment. In a long-term study of depression (Dorus & Senay, 1980), scores on depression decreased substantially regardless of type of substance abuse or length of treatments.

5. Retention

While retention is not an outcome independent of treatment itself, many researchers have considered retention important in the evaluation of treatment (e.g., Gearing, 1977) and of TASC treatment referrals (System Sciences, 1978). Joe and Simpson (1975) reported high rates of treatment termination. Three-quarters of

patients were found to leave treatment prior to completion, and 50% left within 3 months of admission. Szapocznik and Ladner (1977), in their review of factors related to retention in methadone maintenance, cited retention as a major indicator of appropriateness of particular kinds of programs for different kinds of clients. In therapeutic communities, the length of stay has been an important predictor of reduction in drug usage and work adjustment after treatment (Culter, 1977) and of successful completion of treatment (Wexler & DeLeon, 1977). This suggests that retention in a specific program may be an important indicator of treatment outcome.

Other recent research suggests that a broad definition of retention may be needed. Simpson *et al.* (1978) reported that 39% of methadone maintenance clients and about one-quarter of the drug-free treatment program clients return to treatment within a year. This raises the question of whether repeated exposures to treatment are more effective than one episode (McLellan & Druley, 1977). Siguel and Spillane (1978) reported that this was not the case. Clients reporting no previous treatment experience in CODAP have a greater likelihood of completing treatment. Simpson *et al.* (1978) reported a similar result in the DARP Followup. Thus, the total time in treatment appears less important than the retention in a single program. Retention in a single program was identified as a key correlate of successful behaviors across a variety of indices and kinds of programs, even after controlling for other factors (Simpson *et al.*, 1978).

Implications

The above literature review demonstrates that the nature and quality of services received and the correlates with variations in client behaviors during and after treatment remain largely unanswered or continue to require updating. This is the case despite many previous studies, major scientific policy and program questions about the characteristics of clients in programs. As indicated, many studies of individual programs have limited generalizability because of sampling, design and/or measurement problems or idiosyncrasies. Moreover, no comprehensive coordinated national effort to examine the dynamics of the behavior of clients during and after treatment has been attempted for over 5 years.

Present and Ongoing Evaluations of Treatment Effectiveness

The Treatment Outcome Prospective Study (TOPS) specifically was designed to provide a better understanding of the natural history of drug abusers who apply for, and receive, treatment services for substance abuse programs funded by the Federal Government.

TOPS serves a dual purpose: (1) it is used by Government program officials in the policy and program decision making process; (2) it is used by researchers to study the etiology of drug abuse, the natural history of drug abusers and the effects of programmatic interventions.

The initial interview, intreatment (1 month and quarterly), and posttreatment interviews (90-day, 1-year, and 2-year) provide demographics process and outcome in-

formation. The latter two kinds of variables include kinds of services required, requested and received by the clients, and past and present drug and alcohol consumption patterns, criminal behavior, and productive activities including employment. Specific hypotheses, therefore, can be tested and quantitative analyses conducted.

A. Characteristics and Behaviors of the 1979 TOPS Clients

The general characteristics and behaviors of approximately 3,500 clients from some 35 treatment units in the 1979 TOPS admission cohort are similar to those of the national census of treatment admissions. Clients in the four modalities/environments differ greatly in their characteristics and behaviors. These differences must be considered carefully in any comparisons among the modalities/environments. Six major points regarding general characteristics of the total set of clients studied in TOPS can be made. These are outlined below:

1. Most clients are male, Caucasian, young and without a high school diploma.

A summary of demographic features based on modal percentages indicates that most clients are males (72%), non-Hispanic whites (52%), relatively uneducated (51% have less than a high school degree), and relatively young (71% are age 30 or younger; 57% are between ages 21 and 30). Most of the clients live in single family dwellings (80%) and with members of a nuclear or extended family (58%). The general description of client characteristics differed considerably among modalities. More females, whites and younger clients entered drug-free programs.

2. The clients frequently used a variety of drugs and alcohol weekly more often in the year prior to treatment.

Prior to treatment, most clients used a variety of drugs. Regardless of the pattern of drug use, the majority of clients used alcohol (57%) and marijuana (65%) weekly or more often (see Figure 1). Heroin was identified most often by clients as their primary drug of abuse (43%). Within modalities, it was used weekly or more often in the year before treatment by a large majority of clients in detoxification programs (83%) and in methadone programs (63%), but less frequently in drug-free (12%) and residential programs (33%). Heroin is the most frequently reported primary drug problem in detoxification, methadone maintenance and residential treatment programs. Alcohol or marijuana problems (25%) or "no" reported drug problem (27%) are the most frequently reported primary drug problems in outpatient drug-free programs. Regardless of which drug is identified as the primary problem drug, it is used frequently and regularly. Averaged across all program modalities during the year prior to treatment, 77% of all clients used their primary problem drug weekly or more often, and 57% used it daily. A comparison of TOPS and CODAP data indicated them to be similar for drug use patterns, although TOPS clients have somewhat greater opiate use. These data have important implications for treatment outcome, especially posttreatment drug usage patterns and the appropriate utilization of treatment services.

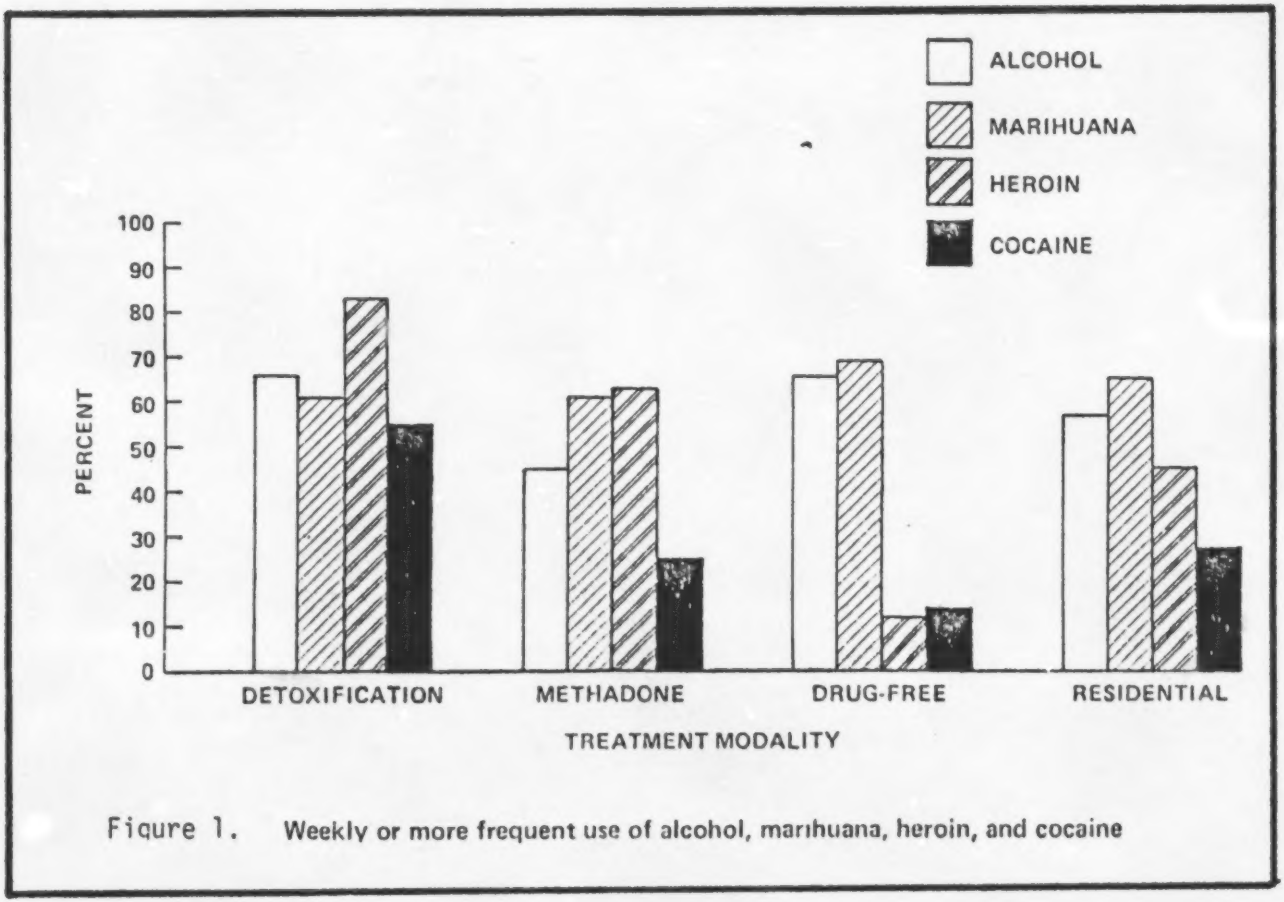


Figure 1. Weekly or more frequent use of alcohol, marihuana, heroin, and cocaine

3. A large proportion of the clients previously participated in drug treatment. Referral sources for treatment vary by modality.

The majority of TOPS clients had a previous drug treatment experience (60%), although there are notable differences in this pattern among modalities. Approximately three-fourths of the clients in detoxification and methadone maintenance programs had received treatment previously (76% and 69%, respectively) compared to lower proportions in drug-free (37%) and residential programs (53%). In addition, the majority of clients who reported prior experience also indicated they had received services in more than one modality (54%). For detoxification programs and methadone maintenance programs, clients are most often self-referred (about 51%) or referred by family or friends (about 32%). In contrast, the criminal justice system is the most frequent source of referral for residential programs (35%) and drug-free programs (28%).

4. A large proportion of the clients report symptoms of depression.

Sixty percent of the TOPS clients reported one or more depressive symptoms. One of six clients in outpatient drug-free and residential programs reported a suicide attempt in the year prior to treatment. Despite the evidence of mental health problems, less than one in four clients had ever received mental health treatment.

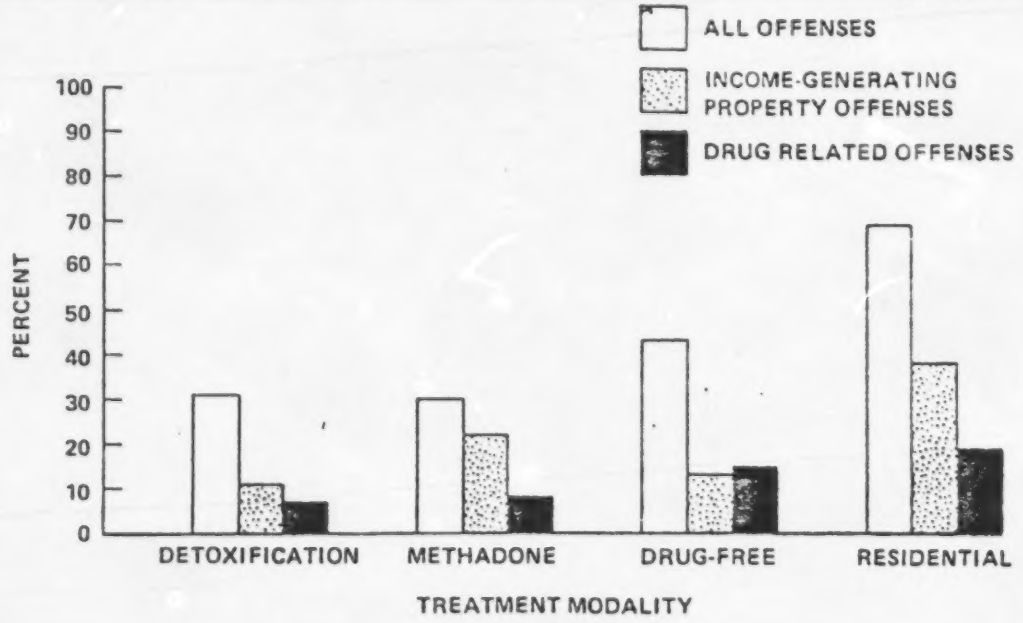


Figure 2. Self reported arrests during year before treatment for all offenses, income-generating property offenses, and drug-related offenses.

5. Many clients are involved in illegal activity and in the criminal justice system.

Considerable illegal activity was reported in the year prior to treatment, and involvement with the criminal justice system was common. Overall, 81% indicated a history of at least one prior arrest, and 44% admitted multiple arrests during the year prior to treatment (see Figure 2). Among residential clients, 63% reported serious criminal activity during the year before treatment. Overall, about one-third of the clients were under criminal justice system supervision when they entered treatment (e.g., on probation or parole), but this varies considerably across modalities (residential, 60%; drug-free, 38%; detoxification, 14%; methadone maintenance, 15%). This variation among modalities is not surprising, given that residential programs and outpatient drug-free programs receive most of the criminal justice system referrals. Residential drug treatment may serve as a transition back into society for criminal justice clients with drug related problems.

6. Clients have not been successful in finding and keeping jobs.

The principal measure of employment was the number of full-time weeks of work. Generally, employment levels were low. Overall, 12% of clients reported full-time employment during the year prior to treatment; another 10% worked full time for at least 40 weeks during the year. One in four clients reported being employed in the week prior to entering treatment. Forty-three percent of clients reported that their jobs provided their greatest source of income, compared to 27% who reported their greatest source of income was from illegal sources.

B. Characteristics and Behaviors of Clients in Outpatient Drug-Free Programs

These data on the characteristics of clients entering each treatment modality/environment suggest the need for a more careful examination of how these differing characteristics may affect treatments rendered and treatment outcomes. While a number of studies have been conducted on the methadone and residential programs, we have limited information on the kinds of clients, treatment and outcomes for outpatient drug-free programs. The TOPS data carefully examined the outpatient drug-free programs within the context of the overall treatment effort.

An outpatient drug-free program (OPDF) is a program that provides psychological and family counseling, vocational rehabilitation, assistance in securing other social service benefit, and, occasionally, legal assistance. Medical services are available, including prescriptions for medical and surgical conditions. Psychoactive substances can be prescribed, after appropriate professional consultation. The only substances that now cannot be prescribed in a drug-free outpatient treatment program are narcotic analgesics (agonists); e.g., methadone and LAAM (levo alpha acetyl methadol or methadyl acetate). Narcotic antagonists like naltrexone, however, when they become available for unrestricted use in the next year or two, will be available for appropriate clients (those with a history of regular heroin or opioid use) in drug-free outpatient treatment programs.

Drug-free outpatient programs provide approximately 53% of all treatment services funded by the Federal Government. Despite this fact, there is no uniform treatment regimen for the nearly 2,400 treatment units providing these services throughout the United States. Some general conclusions, however, can be made. Because of the diversity of programs, some results may apply only to similarly designed and operated treatment programs. The relevance of the data to a given program must be determined on a case-by-case basis.

The data that are being presented have been collected from clients entering eight outpatient drug-free treatment programs located in five geographically disparate cities in 1979. The total number of respondents for this phase of the study was 890. These data were collected at the time clients entered treatment. The demographic characteristics of seven drug user groups in this outpatient drug-free modality are presented in Table 1. Women are more likely than men to have regular habits or consumption patterns involving minor tranquilizers and other *pills*. Alcoholic beverages and marijuana seem to be used regularly by a younger population, as compared to those that report regular use of cocaine and heroin or other narcotics. Only in the consumption of amphetamines, on a weekly or greater basis, does the average age approach that of the regular use of alcohol and marijuana. The average age of the regular heroin users is almost 27, as compared to 23 years of age for regular users of alcohol, marijuana and amphetamines. What is more striking than the average age, however, is the indication that one-third of the regular consumers of alcohol and/or marijuana in treatment are less than 20 years of age.

A tabulation of the percent of outpatient drug-free clients in the seven user groups who use given drugs on a weekly or greater basis is presented in Table 2. This table shows the proportion of clients in each of the seven user categories who also use other drugs on a weekly or greater basis. It must be noted that this table has multiple responses in the columns, and therefore, the reader cannot sum across rows. Overall, more than two-thirds (68.8%) of respondents in the OPDF modality use marijuana on a weekly or greater basis as compared to 62% using alcohol and 12% using heroin. Hallucinogens and inhalants are least likely to be used in regular association with heroin. Cocaine, other narcotics and minor tranquilizers are most likely concomitant substances of abuse. Almost half of regular users of narcotics other than heroin use minor tranquilizers on a regular basis. There appears to be a very high concurrent use of alcohol and marijuana; 75.9% of those who reported weekly or greater use of alcohol also reported weekly or greater use of marijuana. Clearly, there are significant numbers of clients using more than one psychoactive drug on a regular basis.

Table 3 presents depression indicators and drug related problems of the seven weekly or greater user groups in the outpatient drug-free modality/environment. Clients with weekly or greater use patterns of alcohol and marijuana are less likely to have attempted suicide in the year prior to treatment when compared to cocaine, minor tranquilizer or amphetamine users. Alcohol and marijuana users are less likely to have had clinical evidence of depression. Approximately 20% of the regular alcohol and marijuana users deny having any drug related problems, as

Table 1

Demographic Characteristics of Seven Drug User Groups in Outpatient Drug Free Modality/Environment

	Weekly or Greater Use Categories							
	Alcohol (n=544)	Marihuana (n=599)	Cocaine (n=123)	Heroin (n=106)	Other Narcotics (n=144)	Minor Tranquilizers (n=178)	Amphet-amines (n=183)	All Respondents (n=890)*
Sex								
Male	70.2%	71.0%	68.3%	65.1%	58.3%	55.6%	59.6%	63.7%
Female	29.8	29.0	31.7	34.9	41.7	44.4	40.4	36.3
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Age								
Under 18	13.1	16.4	5.7	0.9	5.6	9.0	9.3	13.8
18-20	18.0	16.0	11.4	3.8	9.7	10.1	22.4	13.7
21-25	28.9	30.3	28.5	33.0	33.3	24.7	33.9	29.7
26-30	22.2	21.9	34.1	37.8	27.1	32.6	20.2	22.2
31-44	16.9	15.1	18.7	21.7	20.1	18.5	13.7	18.0
Over 44	0.9	0.3	1.6	2.8	4.2	5.1	0.5	2.6
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Race								
White	82.0	81.3	58.5	53.8	91.0	83.2	88.5	81.4
Black	8.3	10.0	27.7	27.3	5.5	6.7	4.9	10.4
Hispanic	7.5	6.5	8.9	15.1	0.0	7.9	4.4	6.5
Other	2.2	2.2	4.9	3.8	3.5	2.2	2.2	1.7
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

*The All Respondents column is included for comparison purposes. Since a client can be in more than one user group, n's do not sum across to the total number of clients.

Table 2

Percent of Outpatient Drug Free Clients Who Use One Drug on a Weekly or Greater Basis Who Use Other Drugs on a Weekly or Greater Basis

	Weekly or Greater Use Categories							
	Alcohol (n=544)	Marihuana (n=599)	Cocaine (n=123)	Heroin (n=106)	Other Narcotics (n=144)	Minor Tranquilizers (n=178)	Amphet-amines (n=183)	All Respondents (n=890)*
Weekly or Greater Use								
Alcohol	100.0	67.9	70.0	55.2	58.3	59.9	70.3	61.7
Marihuana	75.9	100.0	70.3	62.3	63.2	66.3	83.1	68.8
Inhalants	2.4	2.0	1.6	1.0	3.5	3.4	5.0	1.9
Hallu-cinogens	6.4	7.1	15.8	3.8	10.5	10.8	14.4	5.3
Cocaine	15.8	14.4	100.0	37.7	17.5	19.7	21.0	14.1
Heroin	10.7	11.1	32.5	100.0	25.7	18.6	8.2	12.0
Illegal Methadone	3.7	2.7	5.7	11.3	4.2	7.9	3.3	2.7
Narcotics	15.9	15.4	20.5	35.6	100.0	39.4	27.1	16.6
Minor Tran-quilizers	20.0	20.0	28.7	31.1	48.3	100.0	28.6	20.6
Major Tran-quilizers	2.6	2.4	5.0	0.0	5.6	6.8	6.6	2.2
Barbituates	10.5	9.2	19.7	10.4	20.3	27.7	19.2	8.6
Sedatives	8.3	8.0	13.1	7.6	18.3	18.1	13.3	6.8
Ampheta-mines	24.2	25.9	30.9	14.2	34.5	29.4	100.0	21.1
	MR*	MR	MR	MR	MR	MR	MR	MR

*Multiple Response

compared to approximately 3% for those with regular patterns of heroin or less than 1% for those who have entered treatment with a regular history of using other narcotics. The most common drug related problems for those with weekly or greater alcohol and marijuana use patterns are psychological and family problems. Higher rates of reported psychological and family problems are reported by those entering treatment for cocaine, heroin and other narcotics. It should be noted, however, that financial problems are least likely to be reported among those who have a weekly or greater use pattern of alcohol and marijuana as compared to either those who regularly use *pills,* or the more expensive drugs, cocaine and heroin.

As noted in Table 4, approximately two-thirds of the clients with weekly or greater use patterns of alcohol and marijuana had not been in treatment previously. This compares to approximately two-thirds of the weekly or greater users of heroin who have received prior treatment. Approximately 42% of regular heroin users and 30% of regular cocaine users have had at least three or more prior treatment experiences. The apparent high recidivism of clients with regular use patterns of cocaine may reflect the concurrent use of heroin, the greater proportion of older clients, or the frequent recidivism of heroin users rather than the need for repetitive treatment of cocaine abusers per se. Overall, approximately 36% of clients entering the outpatient drug-free treatment system have received prior treatment, with nearly one-half of this number (18%) having had at least three or more prior treatment experiences.

Employment histories are used often to predict future success and also to indicate the level of social performance prior to treatment. Table 5, weeks of full-time work in preceding year, indicates that approximately one-quarter (26.3%) of the clients were employed at least 75% of the time. Weekly or greater use patterns of cocaine and heroin were less likely to be associated with weeks of full-time work when compared to weekly or greater use categories of alcohol and marijuana.

The data presented from the 890 respondents entering outpatient drug-free treatment programs participating in the TOPS indicated that they utilized a minimum of two drugs on a weekly or greater basis for the entire year prior to treatment. Many more substances were used less frequently. Other data suggest that these clients will use a large variety of substances, some often not even readily identifiable by the client. It would appear that this population is a heterogeneous group in need of different and alternative treatment regimes.

The visible outpatient drug-free client appears to be very different from other drug abuse client populations in this country. The not infrequent suicidal ideation and attempts, the approximately 40% arrest rate in the year prior to treatment, and the approximately one-third treatment recidivism rate all reflect the severity of their illness. The drug abusers entering federally-funded outpatient drug-free treatment programs *do* have substantial psychological, physical and social needs.

Table 3

Depression Indicators and Drug Related Problems of Seven Weekly or Greater User Groups in Outpatient Drug Free Modality/Environment

	Weekly or Greater Use Categories							
	Alcohol (n=544)	Marihuana (n=599)	Cocaine (n=123)	Heroin (n=106)	Other Narcotics (n=144)	Minor Tranquilizers (n=178)	Amphet-amines (n=183)	All Respondents (n=890)*
Depression Indicators								
None	34.7%	35.9%	28.5%	31.1%	25.0%	24.7%	26.8%	36.7%
Could Not Get Out of Bed	16.3	14.6	17.9	26.4	21.5	13.5	11.5	15.7
Suicidal Thoughts	34.1	34.8	31.7	30.2	36.1	40.5	38.8	33.6
Suicidal Attempts	14.9	14.7	21.9	12.3	17.4	21.3	22.9	14.0
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Number of Drug Related Problems								
None	20.2	18.3	4.9	2.8	0.7	6.2	9.8	22.1
1	14.2	13.7	13.8	11.3	6.3	10.7	6.0	13.7
2	15.1	15.9	8.9	7.6	13.2	12.9	14.2	15.7
3	17.1	17.2	21.2	19.8	19.4	17.4	21.9	16.0
4	16.5	16.9	27.6	30.2	27.8	20.8	25.1	16.1
5	12.7	12.8	18.7	20.8	22.9	24.7	16.4	12.0
6	4.2	5.2	4.9	7.5	9.7	7.3	6.6	4.4
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Drug Related Problems								
Medical	34.4	36.2	46.7	54.7	63.6	53.7	49.7	35.5
Psycho-logical	51.8	51.6	65.9	62.3	77.1	72.5	70.0	50.6
Family	57.4	59.3	69.9	71.7	80.6	75.3	68.9	55.3
Police/ Legal	29.7	31.3	33.6	43.8	40.6	36.0	33.7	28.1
Job/School	32.2	36.2	40.7	43.4	48.6	46.1	41.0	32.9
Financial	45.2	45.4	72.4	80.2	65.3	56.2	59.6	42.0
	MR*	MR	MR	MR	MR	MR	MR	MR

*Multiple Response

Table 4

Number of Prior Drug Treatment Episodes for Outpatient Drug Free Clients in Seven Weekly or Greater User Groups

	Weekly or Greater Use Categories							
	Alcohol (n=544)	Marihuana (n=599)	Cocaine (n=123)	Heroin (n=106)	Other Narcotics (n=144)	Minor Tranquilizers (n=178)	Amphet-amines (n=183)	All Respondents (n=890)*
Number of Prior Drug Treatment Episodes								
None	67.1%	65.4%	52.7%	34.4%	53.5%	54.4%	66.7%	63.7%
1	11.0	11.9	8.2	10.8	14.7	15.6	16.1	12.6
2	6.5	7.3	9.1	12.9	15.5	8.8	7.5	6.8
3 or More	15.4	15.4	30.0	41.9	16.3	21.2	9.7	16.9
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 5

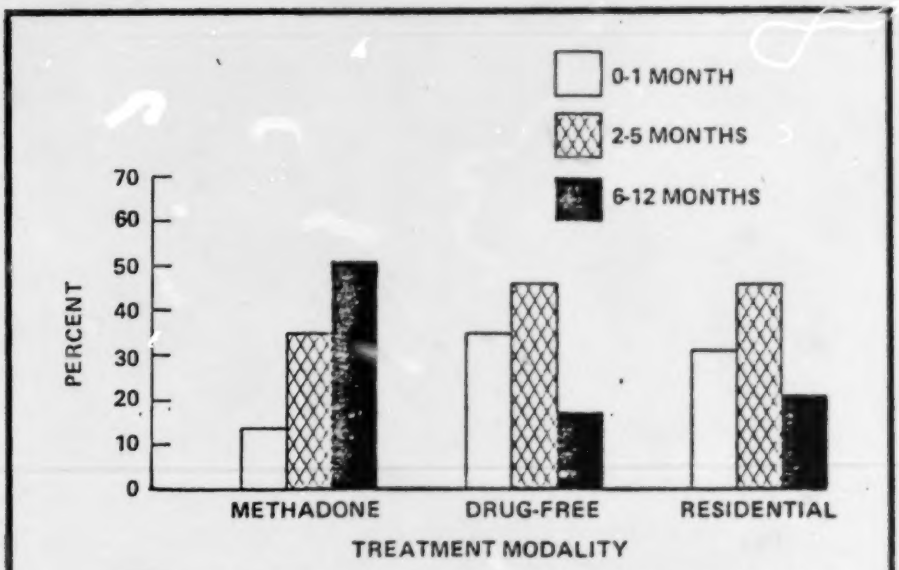
Weeks of Full Time Work in Year Preceding Treatment for
Seven Weekly or Drug Use Groups in Outpatient Drug Free Modality/Environment

	Weekly or Greater Use Categories							
	Alcohol (n=544)	Marihuana (n=599)	Cocaine (n=123)	Heroin (n=106)	Other Narcotics (n=144)	Minor Tranquilizers (n=178)	Amphet-amines (n=183)	All Respondents (n=890)*
Week of Full-Time Work*								
None	21.9%	24.6%	32.2%	38.5%	24.4%	28.7%	19.9%	27.6%
1-13	18.1	20.6	21.7	19.2	25.2	19.1	24.8	18.2
14-39	31.2	29.9	29.6	29.8	21.5	28.7	23.6	27.9
40-51	16.1	13.3	9.6	7.7	19.3	17.8	18.0	15.0
52	12.7	11.6	6.9	4.8	9.6	5.7	13.7	11.3
	100.0% (n=473)	100.0% (n=501)	100.0% (n=116)	100.0% (n=105)	100.0% (n=136)	100.0% (n=162)	100.0% (n=166)	100.0% (n=767)

*Only respondents 18 and over are included in this analysis. N's are reported below each column in parenthesis.

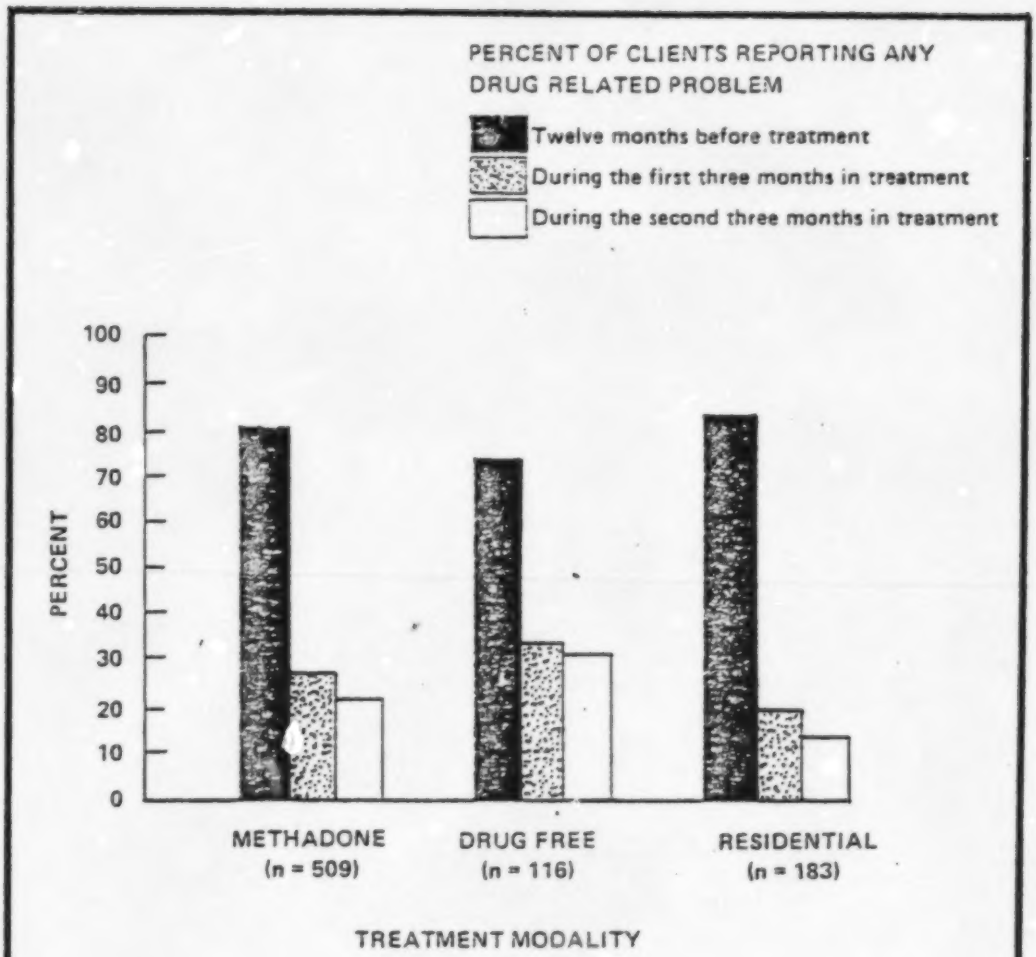
C. Comparisons across Modalities/Environments of Behavior during Treatment

1. Retention varied among types of clients and modalities/environments. Dropout rates (see Figure 3) during the first month in treatment were higher in residential (32%) and outpatient drug-free programs (37%) than in methadone maintenance programs (14%). Clients stayed in treatment longest in methadone maintenance programs (51% stayed at least 6 months). Examination of dropouts by subgroupings of clients according to sex and age, legal status at admission, depression indicators, and primary problem drug showed varied patterns among modalities.
2. Drug related problems were reduced substantially during treatment. The services rendered during drug treatment appear to have a clear effect of reducing the drug related problems among clients who remain in treatment (see Figure 4). Generally, as the length of treatment increased, the percentage of clients reporting drug related problems decreased.
3. Negative behavior (drug use, illegal activity, depression) decreased *during* treatment, and positive behavior (employment) increased.



NOTE: Detoxification programs are omitted since they are designed for short time treatment.

Figure 3. Months clients remained in treatment.



Note: Problems include medical, psychological, family, legal, job/education, and financial difficulties.

Figure 4. Drug-related problems before and during treatment for clients remaining in treatment at least six months.

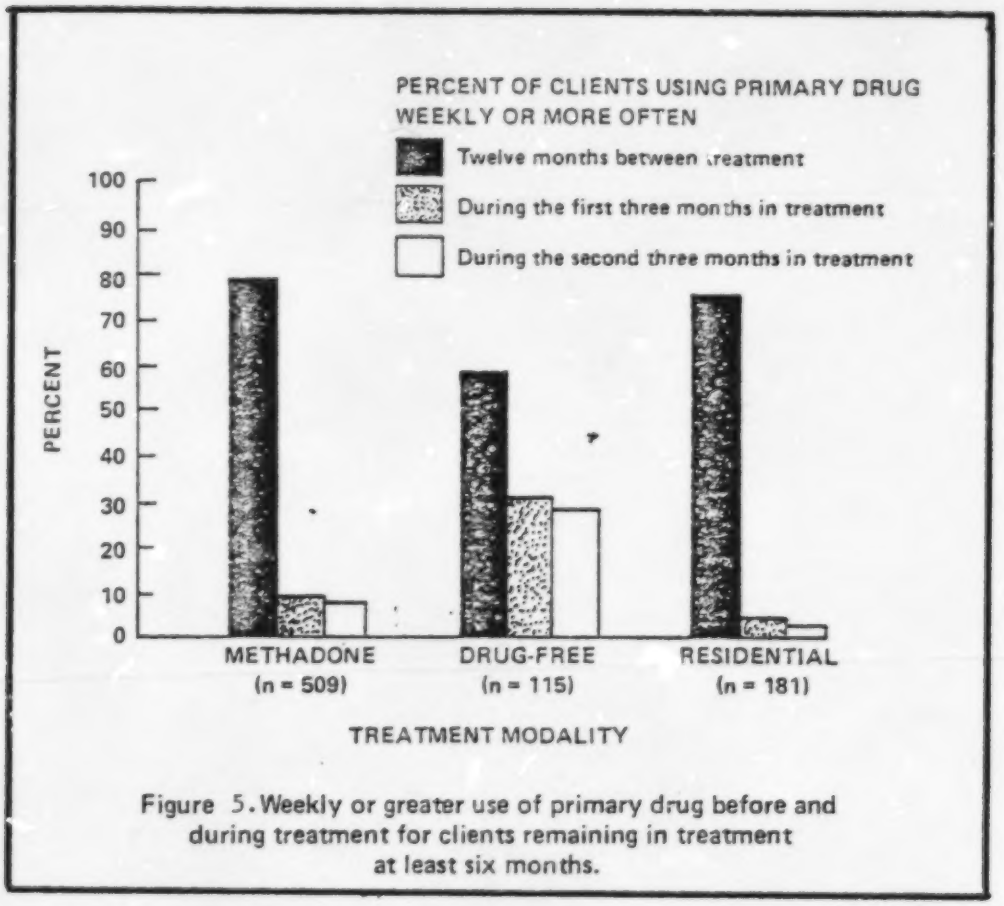
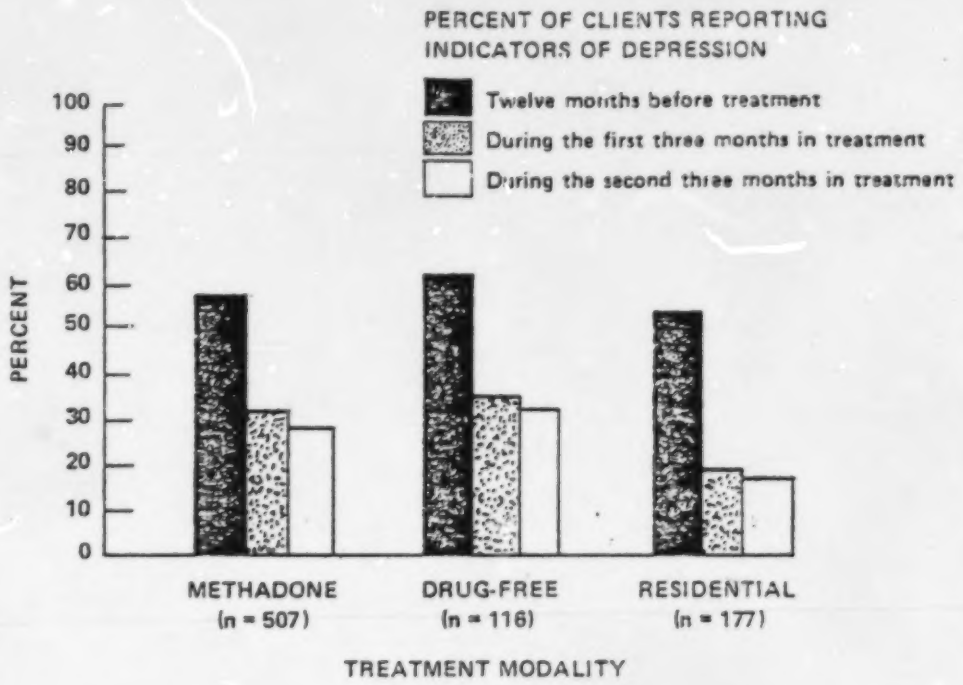


Figure 5. Weekly or greater use of primary drug before and during treatment for clients remaining in treatment at least six months.

Although drug use did not disappear, weekly or greater use of the primary problem drug was substantially lower during treatment (see Figure 5). Few reports of serious illegal activity during treatment were obtained. Depression indicators (see Figure 6), although still reported by many, were reported by a lower percentage of clients. Full-time work appeared to have a small increase over the course of treatment. Generally, the major changes in behaviors were observed during the first 3 months and then persisted over the course of treatment.

D. Conclusions

These data are indicative of the multiple and complex problems of drug abuse that continue to evolve and evoke much social concern. Drug users in the last decade, entering federally-funded or other governmentally-funded treatment programs, appear to continue to have multiple contacts with the social service, health service, and criminal justice system. They continue to be a significant visible population whose needs are extraordinary and whose pathology has yet to be



Note: Indicators of depression include feeling so depressed that client could not get out of bed, suicidal thoughts and suicide attempts.

Figure 6. Indicators of depression before and during treatment for clients remaining in treatment at least six months.

totally accepted as being either psychopathologic, requiring medical/psychological/social intervention or sociopathic, requiring law enforcement and criminal justice intervention. The initial results of TOPS support those of DARP: Treatment does have a positive impact on behavior.

A more detailed assessment relating outcomes to drug abuse treatment will be possible as the TOPS Followup Study data become available. To assess the relationships among the various behaviors and treatments, other, more detailed, multivariate analyses are being coordinated. These analyses focus on (1) detailing possible alternative explanatory factors such as time at risk, validity and reliability of the data; (2) studying specific outcome behaviors (alcohol use, drug use, illegal activity, depression, employment) in detail to develop explanatory models; and (3) summarizing the results of these analyses into a general model indicating the factors important in explaining treatment outcomes. Such long-term longitudinal

data on sufficiently large samples gradually will provide an opportunity to understand better the dynamics of drug abusers and their active involvement with all social systems, that is, those that are supportive and those that are restrictive.

Future Directions of Research

Pragmatically, research is useful, if, and only if, it provides useful information and data that can be utilized in a constructive manner. The data presented above provide the reader with a basis for reconsidering the current directions of treatment for drug abuse related problems. The evidence recognizes that drug abusers have a series of problems including social adjustment and behavioral problems, and indicates the chronicity and complexity of these problems. Additional analyses are necessary on the intreatment data and follow-up data to determine possible explanatory factors, such as (1) time at risk, validity and reliability of the data; (2) studying the specific outcome behaviors (alcohol use, drug use, illegal activity, depression and employment) in detail to develop explanatory models; and (3) summarizing the results of these analyses into a general model indicating the factors important in explaining treatment outcomes.

What is not addressed in a model dealing with treatment outcomes and treatment process is a determination of what factors have combined to produce drug abusers seeking assistance because their behavior is too painful for them to maintain. Treatment related research and clinical behavioral research provide a means to develop more efficient and effective treatments; they do not address issues concerned with primary prevention. Treatment attempts to limit morbidity and mortality; it rarely attempts to address the primary prevention of drug abuse.

While data are being collected to assist in the better understanding of the drug abuser and his or her interactions with the community and the family, early interventions are necessary if those potential active members of the drug-using population are to be dissuaded or reoriented to a more productive and socially acceptable lifestyle.

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